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EXAMINER	
ROBERTS, JESSICA M	

ART UNIT	PAPER NUMBER
2621	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/821,864	MATSUMURA ET AL.	
	Examiner	Art Unit	
	JESSICA ROBERTS	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/2008 has been entered.

Status of Claims

Claims 21-30 are currently pending. Claims 1-20 have been canceled by Applicants amendment filed on 12/17/2008.

Acknowledgement of Amendment

Applicants' amendment filed on 12/17/2008 overcomes the following objection(s)/rejection(s):

The objection to claim 3 has been withdrawn in view Applicants' amendment.

Response to Arguments

2. Applicant's arguments with respect to claims 21-30 have been considered but are moot in view of the new ground(s) of rejection.

As to Applicants argument regarding Katta fails to teach the features related to the means for correcting the upper limit and lower limit.

The Examiner respectfully disagrees. Fig. 16 is a flowchart for explaining the operation for setting q.sub.-- scale to be used in a subsequent picture when the number of bits generated per picture is below the lower limit D0. Usually, q.sub.-- scale is decremented by one, but if PIC.sub.-- CNT is significantly smaller than the lower limit, for example, if less than 1/2 of the lower limit D0, the decreasing width is varied depending on q.sub.-- scale at that time. Generally, in the encoding process in a certain picture, the product of the q.sub.-- scale value and number of generated bits, that is, complexity, is said to be almost constant. That is, when q.sub.-- scale is half, the number of generated bits is doubled. When a relatively large value is assigned for q.sub.-- scale, to control the number of generated bits by varying the value, it is understood that the degree of change must be large as compared with the case of a smaller q.sub.-- scale value, column 13 line 2-15 and fig. 16). Since Katta discloses to control the number of bits by varying the value of the q.sub.--scale, it is clear to the examiner that by adjusting the scale to control the number of bits, that Katta discloses to vary or adjust (correct) the quantization scale based with respect to a threshold, which reads upon the claimed limitation.

Therefore, it is clear to the examiner that Katta teaches to adjust the quantization scale with respect to a threshold, which reads upon the claimed limitation).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 21- rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification or disclosure does not provide support for the "means for calculating an evaluation value" or "means for correcting"

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 21-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 21 is indefinite because it is unclear what structure is performing the recited function for the "means for calculating an evaluation value" and "means for correcting".

9. Re claim 22-25 which fails to remedy the issue discussed above, thus claims 21-25 are too rejected as being indefinite for depending upon independent claim 21.

10. Re claim 26-30 see analysis and rejection for claims 21-25.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katta et al., US-6,115,421.

As to **Claim 21,** Katta teaches an apparatus for coding a moving image, comprising: a coding unit (fig. 13 element 20) configured to generate a code of each frame of the moving image (column 11 line 50-53) by compression coding with quantization (column 11 line 51-53 and element 22); a first verification unit configured to calculate a first occupancy of a first buffer as an input buffer of a virtual decoding apparatus , if the code were to be supplied to the first buffer by a first bit rate (column 12 line 12-17 and S20), the first occupancy being a prediction value of code quantity to be stored in the first buffer (At initial processing, at step S20, the error DIF_Gi between the

target number of generated bits per GOP calculated from the target bit rate R (bps) and the present number of generated bits, reference value q_st of q_scale, and virtual buffer occupation capacity VBV_Buffeer-fullness of the decoder are all set, column 12 line 12-17 and S20. Since Katta discloses at initial processing, at step S20, the error DIF_Gi between the target number of generated bits per GOP calculated from the target bit rate R (bps) and the present number of generated bits, it is clear to the examiner that calculating the error DIF_Gi which is the difference between the target number of generated bits and the present number of bits, reads upon a predicted number of bits, which reads upon a claimed limitation); a second verification unit configured to calculate a second occupancy of a second buffer and a change rate of the second occupancy, if the code were to be supplied to the second buffer as the input buffer of the virtual decoding apparatus by a second bit rate lower than the first bit rate, the second occupancy being a prediction value of code quantity to be stored in the second buffer (column 12 line 55-67, and fig. 13, fig. 15a, elements S26) a skip control unit configured to control the coding unit to skip coding of all or a part of one frame, if the first occupancy of the first buffer is likely to underflow (At step S26, it is judged if VBV_Buffer_fullness is below the lower limit D2 of the buffer fullness of the reproducing side decoder or not, and if below the lower limit D2. a picture skip processing signal is issued at S27 to avoid underflow, column 12 line 60-64); a code quantity calculation unit configured to calculate a code quantity (column 12 line 2-10 and fig. 14 element 223) to be assigned to one or a plurality of frames based on the second occupancy and the change rate (column 14 line 25-30 and fig. 16) ; a determination unit configured to

determine an upper limit and a lower limit of a quantization scale as a parameter of coding level based on the first occupancy, the second occupancy and the change rate (quantizer control block, column 12 line 10-11, and S20-S21, fig. 15) ; and a change control unit configured to change the quantization scale of the coding unit within a range between the upper limit and the lower limit based on the code quantity; wherein the determination unit includes, means for correcting the upper limit upwards if the first occupancy is below a first threshold (Katta FIG. 16 is a flowchart for explaining the operation for setting q.sub.-- scale to be used in a subsequent picture when the number of bits generated per picture is below the lower limit D0. Usually, q.sub.-- scale is decremented by one, but if PIC.sub.-- CNT is significantly smaller than the lower limit, for example, if less than 1/2 of the lower limit D0, the decreasing width is varied depending on q.sub.-- scale at that time. Generally, in the encoding process in a certain picture, the product of the q.sub.-- scale value and number of generated bits, that is, complexity, is said to be almost constant. That is, when q.sub.-- scale is half, the number of generated bits is doubled. When a relatively large value is assigned for q.sub.-- scale, to control the number of generated bits by varying the value, it is understood that the degree of change must be large as compared with the case of a smaller q.sub.-- scale value, column 13 line 2-15 and fig. 16). Therefore, it is clear to the examiner that Katta teaches to adjust the quantization scale with respect to a threshold, which reads upon the claimed limitation); means for correcting the upper limit, if the evaluation value is below a second threshold, so that the upper limit becomes high in proportion to a difference between the evaluation value and the second threshold, the

second threshold being set for detecting the second occupancy under a status of underflow or a sudden decrease in the second buffer (Katta FIG. 16 is a flowchart for explaining the operation for setting q.sub.-- scale to be used in a subsequent picture when the number of bits generated per picture is below the lower limit D0. Usually, q.sub.-- scale is decremented by one, but if PIC.sub.-- CNT is significantly smaller than the lower limit, for example, if less than 1/2 of the lower limit D0, the decreasing width is varied depending on q.sub.-- scale at that time. Generally, in the encoding process in a certain picture, the product of the q.sub.-- scale value and number of generated bits, that is, complexity, is said to be almost constant. That is, when q.sub.-- scale is half, the number of generated bits is doubled. When a relatively large value is assigned for q.sub.-- scale, to control the number of generated bits by varying the value, it is understood that the degree of change must be large as compared with the case of a smaller q.sub.-- scale value, column 13 line 2-15 and fig. 16). Therefore, it is clear to the examiner that Katta teaches to adjust the quantization scale with respect to a threshold, which reads upon the claimed limitation); and means for correcting the lower limit, if the evaluation value is above a third threshold higher than the second threshold, so that the lower limit becomes low in proportion to a difference between the evaluation value and the third threshold, the third threshold being set for detecting the second occupancy under a status of overflow or a sudden increase in the second buffer (Katta FIG. 16 is a flowchart for explaining the operation for setting q.sub.-- scale to be used in a subsequent picture when the number of bits generated per picture is below the lower limit D0. Usually, q.sub.-- scale is decremented by one, but if PIC.sub.-- CNT is

significantly smaller than the lower limit, for example, if less than 1/2 of the lower limit D0, the decreasing width is varied depending on q.sub.-- scale at that time. Generally, in the encoding process in a certain picture, the product of the q.sub.-- scale value and number of generated bits, that is, complexity, is said to be almost constant. That is, when q.sub.-- scale is half, the number of generated bits is doubled. When a relatively large value is assigned for q.sub.-- scale, to control the number of generated bits by varying the value, it is understood that the degree of change must be large as compared with the case of a smaller q.sub.-- scale value, column 13 line 2-15 and fig. 16). Therefore, it is clear to the examiner that Katta teaches to adjust the quantization scale with respect to a threshold, which reads upon the claimed limitation).

Katta does not explicitly disclose means for calculating an evaluation value based on the second occupancy and the change rate, the evaluation value being larger if the second occupancy is larger or if an increase rate of the second occupancy is higher. However, Katta does discloses at step S26, is judged if VBV_Buffer_fullness is below the lower limit D2 of the buffer fullness of the reproducing side decoder or not, and if below the lower limit D2, a picture skip processing signal is issued at S27 to avoid underflow (column 12 and fig. 15a). Further Katta discloses when a relatively large value is assigned for q.sub.--scale, to control the number of generated bits by varying the value, it is understood that the degree of change must be large as compared with the case of a smaller q.sub.--scale value. Since Katta discloses to judge the VBV_Buffer_fullness is below the buffer fullness of the reproducing decoder, and the quantization change must be larger, therefore, it is obvious that in order for Katta to

judge the VBV_Buffer_fullness compared to the buffer fullness of the reproducing side decoder, an evaluation or judging value is necessary in order to perform the judging, and larger change which reads upon the claimed limitation. Furthermore, since Katta discloses to judge the VBV_buffer_fullness with respect to the buffer fullness of the reproducing decoder, to determine if it is below a limit, and if so, to issue a skip picture signal, is obvious that in order for the skip signal to be issued, the buffer fullness of the reproducing decoder (occupancy) is higher than the VBV_buffer_fullness (occupancy), which reads upon the claimed limitation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize this teaching of Katta to obtain the specified claimed elements for improved image coding.

As to **claims 22-23,** Katta does not explicitly teach wherein the change control unit changes the quantization scale so that that the second occupancy is above a lower limit of the second occupancy. However, Katta teaches step S26, it is judged if VBV.sub.-- Buffer.sub.-- fullness is below the lower limit D2 of the buffer fullness of the reproducing side decoder or not, and if below the lower limit D2, a picture skip processing signal is issued at step S27 to avoid underflow (column 12 line 60-64 and fig. 15a-15b). Since Katta teaches to use a VBV for calculating the quantization scale, it is clear to the examiner that when using a VBV for over and underflow, clearly there is a threshold or limit associated with the VBV, which reads upon the claimed limitation.

As to **claim 24,** Katta teaches the apparatus according to claim 21, wherein the first bit rate is the highest value of input bit rate to the input buffer of the virtual decoding apparatus (column 13 line 21-25. Since Katta discloses the degree of change is set so that the number of generated bits may reach the lower limits in several pictures, it is clear to the examiner that Katta teaches the fir4st bit rate is higher, which reads upon the claimed limitation.

As to **claim 26,** see the rejection and analysis made in claim 21, except this is a claim to the method with the same limitations as the claimed apparatus. Thus the rejection and analysis made in claim 21 also applies.

As to **claims 27-28,** see the rejection and analysis made in claim 22, except this is a claim to the method with the same limitations as the claimed apparatus. Thus the rejection and analysis made in claim 22 also applies.

As to **claim 29,** see the rejection and analysis made in claim 24, except this is a claim to the method with the same limitations as the claimed apparatus. Thus the rejection and analysis made in claim 24 also applies.

14. Claims 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katta et al., US-6,115,421 in view of Kawashima et al., JP2003-092759.

As to **claim 25,** Katta is silent in regards to the apparatus according to claim 21, wherein the second bit rate is a target value of an average bit rate of the code generated from the coding unit.

However, Kawashima teaches wherein the second bit rate is a target value of average bit rate of the code generated from said coding unit ([0026]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of with Katta for improving quality of the appearance of video and which was stabilized smoothly being reproduced [0009].

As to **claim 30,** see the rejection and analysis made in claim 25, except this is a claim to the method with the same limitations as the claimed apparatus. Thus the rejection and analysis made in claim 25 also applies.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Legall et al., US-5,929,916 Variable Bit Rate Encoding.

17. Mihara et al., US-6,229,849 Coding Device and Method

18. Koto et al., US-7,075,982 Video Encoding Method and Apparatus

Examiner's Note

19. The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the

applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed…." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA ROBERTS whose telephone number is (571)270-1821. The examiner can normally be reached on 7:30-5:00 EST Monday-Friday, Alt Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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